**Agenda for Meeting:**

1. Review John Deere Platform

Questions:

* 1. What does the platform look like for the user

Farm, different paddocks and geometries. All equipment has telemetry data.

Decision support system. Every operation i.e. sprayer is shown on platform. Developer options has machinery and sensors. Goal is to have environment other sensor to platform and link it. And Display on the map. (Map section of Operations Center). Sensor streams data. Need to send an email

Telemetry data with real time RPM, fuel, idle time, time working under Maps.

One data under a team -> Setup has data.

**Make a UWA account and send that through today.**

**Get letter from Atif and Gustavo if required.**

Data is stored in ShapeFiles GIS data. Geometric

**Target Rate -> Required rate of soil moisture, does that change over time over different prases**

**Manipulate through Irrigation System. Target rate from point of view. They used to sow seeds when there was rain, now they sow when dry, because they want optimal window of growing crops. Changing soil moisture in clay soil particularly in soil compaction problem**

**13-14% of WA has clay soils -> This is why soil compacts. Action: Pressure, deforms soil. Depends on resistance of terrain (sandy, clay) weight of equipment and down force is major factor. Large equipments (farm machinery western Australia)**

**Heavy machinery : Bourgalt heavy seeder – 17 tonnes without seed and fertiliser. They control it with trend lines and always be on the same track. Also waterlogging. Waterlogging can be visible and the effects can last even after the visible water level decreases. So we need to reach the right moisture level threshold. Top level of soil is sand, second layer is clay and the water gets trapped between two layers**

**Communication from sensor to API**

**John Deere has rainfall in mm, API for BOM available,** PERSIANN CDR NOAA (out of scope) Package from Python or R package with deeper network of weather stations

**GIS for geometry geo-fencing**

Requirements for sending time based:  
1. Twice a day

2. Early in the morning (stop for lunch)

3. Sampling rate (once an hour takes a reading)

4. Send through what we think requirement are

5. Areas we are covering, problem statement and quantification of impact. Get feedback

Next Steps:  
1. Developer Account

2. Setup geo-fencing (GIS) and adding network

3. API

4. Send message to Rachel regarding network

5. LoRa limitation (mesh network using local raw LoRa with NB-IoT with a gateway)

**Third parties currently source data from platform, process and send back to platform – we could use this for interpolation of the soil moisture data.**

* 1. What does landing page look like
  2. How would they normally check their assets
  3. Can you integrate other applications, ‘views’ or dashboards
  4. Besides operations do they manage anything else – trying to see if there is an opportunity for value add i.e. can we integrate with existing BOM rainfall data as a benchmark. OR do they manually collect the soil moisture that they want to view on the platform

1. Discuss questions we have for Farmer

* Ask Hani what we wrote down

1. Feedback for work we have completed

* Have them showcase in 1-2mins what they have done so far, get any feedback
  + David – Problem Statement
  + Bella – Quantifying Impact
  + Uday/Dharani – Initial Research into components
* List of Requirements  
  1. Number of Devices -?

2. Maximum and minimum distance between devices

3. What information is gathered and how often?

4.

* Solution Components:

1. Overall Considerations:
   1. Authentication of device
   2. Encryption (at rest vs in transit)
   3. Device and Software Setup + Calibration (Testing and Validation)
   4. Maintenance
   5. Deployment
   6. Retrieval
   7. Disposal
2. Physical Hardware Device:
   1. Soil Moisture Sensor(s)
   2. Microcontroller
   3. Power Storage
   4. Power Management
   5. Power Generation
   6. Communication Transceiver (how do we decide which one) – depends on transmission/communication pipeline
3. Transmission Pipeline (can we create a diagram, horizontal axis
   1. Between devices (node to node)

A diagram of a network

Description automatically generated with medium confidence

1. Discuss any bottlenecks or uncertainties
2. Discuss next steps
3. Book in next meeting

Handover and Post Handover Considerations